



A STUDY ON FOOD ADULTERANTS AND AWARENESS ABOUT ADULTERATION AMONG STUDENT OF GORAKHPUR DISTRICT

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ABSTRACT

To study on common food adulterants and knowledge about adulteration among Student of Gorakhpur district. Man cannot live without food. It is essential for health and life. But this food must be pure, clean and fresh. Nowadays, foods are often adulterated. In hotels and restaurants stale and rotten foods are mixed with fresh food and served to the customers. Fish and vegetables are adulterated by putting on them chemicals and other preservatives in order to make them look fresh. Bakery and confectionery products are also adulterated by using toxic substances. Junk food contains harmful chemicals. Even fruits, milk and beverages are also adulterated. In fact, all kinds of foods and food articles are adulterated by dishonest and greedy businessmen for a quick and unearned profit. This study was conducted in student, area of Gorakhpur. To assess the knowledge of diseases related to adulteration of foods and knowledge of Govt. Acts. There are 100 respondents appropriate questionnaire were used as a total over all existing the study. It was found that out of all respondents only 72% subject have knowledge about adulteration of foods supplement, remaining respondents have no knowledge about adulterants, Majority of subjects knows only AGMARK brands majority of respondents have not knowledge about disease related to adulteration of foods. An adulteration is a common problem not only found in existing local net area but it is mostly found the world

KEYWORD: Intentional Adulteration, Incidental adulteration, Metallic contamination. Adulterants, Adulteration, student, Gorakhpur district, psychologically health, Physical health, food articles.

Adulteration of food stuffs is commonly practiced in India by the trade. When the price of the food production is higher than the price which the consumer is prepared to pay, seller is compelled to supply a food product of inferior quality. Thus adulteration occurs. They mix low quality, cheap, non-edible substances with food and make it adulterated. The cheap, low quality and generally non-edible substances which are purposely mixed with food items to earn profit are called Adulterants. Food adulteration is a serious crime which is punishable under the law. Consumption of adulterated food can cause serious disorders such as diarrhoea, asthma, ulcers, food poisoning, cancer and may even result in death. Consumption of Haldi adulterated with lead chromate, may lead to serious mental disorders, especially in children. It can also cause anaemia and paralysis. Dhanja powder is adulterated by adding powdered cow-dung or horse dung to it. Milk is adulterated with water and chemical mixture of urea etc, rice with stones and cooking oil with inferior quality oils. Most of the adulterants are very harmful and toxic. Many efforts or rules have been taken by the Government but still the situation is alive. In this time argemone oil is adulterated in edible or vegetable oils for this cause there are very dangerous disease 'Epidemic dropsy' was seen.

Adulteration is defined as the process by which the quality or the nature of a given substance is reduced through, the addition of a foreign or an inferior substance and, the removal of vital elements. The Bureau of Indian standards inspects the various food products manufactured. If the products have the standard quality needed, the certificate is issued. The various certificates of reliability are the F.P.O (Food Products Order) mark, the I.S.I. (Indian Standard Institution) mark and the AGMARK (Agriculture Marketing). In order to test the purity of the various food items, most of the big cities have food testing laboratories. To keep a check, the officials of the health department take samples of common Food products from different shops and send them to the food laboratories for analysis. In case an adulterated food is detected, the manufacturer and the shop-keeper who is selling such a product, is prosecuted and punished, According to the law. There is hardly any item in the Indian market, which is not adulterated. Research has shown that even fruits, vegetables and cereals, sold in the market, are said to contain high levels of toxic metals like lead, nickel, cadmium, and chromium. Adulteration spares nothing when a spirit of becoming quickly rich, over-rides the moral ground. Even the simple water is not spared. Under the well known brand name-mineral water is reused filling with tube well water and is sold to weary thirsty train passengers. Adulteration is a fatal crime against society. We have a law against adulteration but like other social laws, it is rarely enforced. The responsible officers and politicians do not take any action against social fatal evil until it takes the form of a big tragedy and becomes the heading of newspapers. Same is the case with Adulteration. In short, government wakes up only when Adulteration results in fatal tragedy.

"We have no business to make laws when we have no intention to enforce them-the prevention of Food Adulteration Act and others."

Adulteration of food may endanger health if the physiological function of the consumer is affected due to either addition of a deleterious substance or the removal of a vital component. In order to protect the health of the consumer, the Govt. of India promulgated the "Prevention of food Adulteration Act" (P.F.A.) in 1954.

An article of food shall be deemed to be adulterated.

- If any constituent of the article has been wholly or in part abstracted so as to affect injuriously the nature substance or quality thereof.
- If the article has been prepared, packed or kept under insanitary conditions where by it has become contaminated or injurious to health.
- If the article consists wholly or in part of any filthy, putrid, disgusting, rotten decomposed or diseased animal or vegetable substance or insect infested or otherwise unfit for human consumption.
- If the article is abstained from a diseased animal.
- If the article contains any poisonous or other ingredient which renders it injurious to health.
- If the article contains any prohibited preservative or permitted preservative in excess of the prescribed limits.

Adulteration may be intentional. The former is a willful act on the part of the adulterator intended to increase the margin of profit incidental contamination is usually due to ignorance, negligence or lack of proper facilities.

Intentional Adulteration

Intentional Adulteration is sand, marble Chips, stones mud, chalk powder, water, mineral oil and coal tar, dyes. These adulterants cause harmful effects on the body.

Addition of water to milk and removal of a part of the fat as cream from milk are the common malpractices resorted to by the vendors sometimes milk reconstituted from skim milk powder is mixed with pure and sold as pure milk. Hydrogenated vegetable fat (vanaspati) is added to skimmed milk and homogenized. The cream separate from such milk is used to adulterate genuine cream. In order to increase butter fat content, hydrogenated vegetable fat is added to milk.

Cheap edible and non edible oils such as linseed oil crude cotton seed oil argemone oil and mineral oils (white oil) and industrial chemical TCP (Trichloropropane) are used to adulterate costly vegetable oils. Toxic effects in human subjects due to admixture of argemone oil with mustard oil have been reported frequently from time to time. Regular consumption of mustard oil contain even 10% of argemone oil can cause a Disease Known as "Epidemic Dropsy" in human being. The disease starts with gastro-Intestinal disturbances irregular fever and ashes over the exposed parts of the body and low pulse rate. Edema of the face hands and legs enlargement of the liver and respiratory trouble occurs. Vanaspati and animal body fats are used for adulteration in ghee. In the year 1935-36 when. Six samples of so called pure ghee was collected it was found that they were adulterated with vegetable products made from groundnut oil and the extent of adulteration was up to 80%. Tapioca flour is used to adulterate wheat flour and tapioca is used to adulterate wheat semolina. Sand, dirt, earth,

gritty matte soap stone are added to flour. Refined flour (Maida), Kesari dhal (Lathrus sativus) colored yellow with coal tar dyes are used to adulterate Bengal gram and red gram dhal. Kesari dhal contains a toxic which causes the crippling disease known as lathyrus. Colored sugar syrups are used to adulterate honey. Coffee powder is adulterated with powder obtained from roasted bran, roasted seed or tamarind seed. Tea is adulterated with exhausted tea leaves of other plants. Asafetida is adulterated with vegetable gums and resins. Turmeric is coated with lead chromate or coal tar dyes. Starch colored yellow with coal tar dyes is added to turmeric powder. Starch colored brown with dyes is added to curry powder. Mustard is adulterated with argemone seeds. Black pepper is adulterated with papaya seeds.

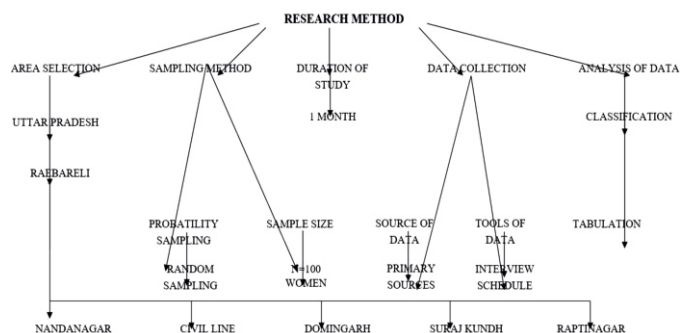
Incidental Adulterants

Incidental Adulterants are pesticide residues tin from cane droppings of rodents larvae in foods. Metallic contamination with arsenic, lead, mercury can also occur incidentally. The Argemone Mexicana is frequently found growing in brassica fields and if proper care is not taken during cultivation its seeds get mixed with those of brassica and the oil expressed contains also argemone oil. Its presence in edible mustard oil is epidemic dropsy are probably due to it. If arsenic lead or mercury get accumulate in the body they can be harmful. Lead is a toxic element and contamination of food with lead can cause toxic symptoms turmeric is coated by Illiterate manufactures in India with lead chromate. Lead brings about pathological changes in the kidneys, liver and arteries. The common lead poisoning is nausea, abdominal pain, anemia, insomnia, muscular paralysis and brain damage. Fish caught from waters contaminated with mercuric salts contain large amounts of mercury. The organic mercury compounds-methyl mercury are neurological is the most toxic. The toxic effects of methyl mercury are neurological. When the brain is affected, the subject becomes blind, deaf and paralysis of the various muscles makes him a cripple. The other elements which are toxic small dose are cadmium, arsenic, antimony, cobalt etc. Toxic effects in human subjects due to consuming foods contaminated with these elements have been reported by some workers. The most common incidental adulterants are pesticides. DDT and Malathion residues may be present on the plant product which more them what is considered as safe. The maximum permissible residue allowed for DDT, Malathion is 3 Ppm and for pyrethrum it is 10 Ppm. Chemicals like DDT are absorbed by the small intestine when ingested. These then adhere to the fatty tissues-the toxins usually pill up in the fatty tissues of such vital organs as the thyroid, heart kidney, liver, mammary gland and testes and damage these organs. They can be transferred from to umbilical cord blood to the growing fetus and through breast milk. In children the disease apart from crippling them inhibits their growth. The P.F.A. Act. Have maximum limits for the presence of food additives such as metabisulphite, benzoic acid and ascorbic acid in processed foods. Row food such as meat, fish, milk and vegetable grown on sewage are likely to be contaminated with harmful Micro organism. These are generally destroyed during cooking or processing of food. Some of the Macro organisms may service due to inadequate meat processing further, some of the foods, if consumed in the row state, may cause food poisoning. Recent studies have shown that food grains legumes and oil seeds when stored in humid atmosphere are infected by pathogenic fungus which can cause serious illness.

OBJECTIVE

To study about the awareness of common food adulterants, in student's of Gorakhpur. Adulteration is one of the biggest problem faced in present time, if we see, from the view of adulteration, we found that all the food articles like milk and milk product vegetable oil and ghee, spices and condiments, beverages like coffee, tea etc are adulterated from many ways. Many efforts or rules have been taken by the Government but still the situation is alive.

For this reason, in this study I want to finds that how many students have knowledge about adulteration and adulterants of food.



The study was undertaken on selected samples from Gorakhpur district (UP). The area is selected for the research is Nandanagar, Domingarh, Surajkundh, Rapti Nagar and Civil Line. The survey was conducted through questionnaire method, home visit and interviews to the information of the general and specific information. The sample of population is 100 students. Among the total respondents 25 students are high income groups, 25 students are middle income group, 25 students are low income group and 25 student are very low income group. Tool techniques used in the study should be appropriate as the tools are the key to

obtain reliable and valid results. Keeping view the nature of the problem under the investigation and the kind of study required for the research questionnaire cum interview method was adopted. The various parts of the questionnaire related to general information i.e. name, address, religion, educational level family size, family type occupation of respondents & its family were asked. Specific formation contained questionnaire questions related to awareness and knowledge about adulteration, questions related to common adulterants in food items.

It refers of the status and the position of the respondent's family in the society in the present study, this variable was measured by using SES Scale development by Venktramaiah 1990. This scale includes, occupation of the head of the family, land holding of the family, cast education, Socio political participation, possession, type of house and members in the family. The subjects were categorist on the basis of the following Table.

Socio economic Status	Scale
Low SES	3-11
Lower-Middle SES	12-18
Middle SES	19-25
Upper-middle SES	26-32
Upper SES	33-39

Spearman Browns formula-

i.e. $r_{rel} = 2r/1+r$

Where r_{rel} is the reliability coefficient.

R is the correlation which was obtained by Pearson formula.

The reliability of the knowledge test was calculated to 0.2737.

Karl Pearson's coefficient of correlation between the two series is taken as the measures of coefficient of reliability of the schedule.

Before the calculation, the question is grouped to two series and scored all questions that the classified scored series calculated. The coefficient of correlation of schedule was 0.005 i.e. medium degree of correlation.

Statistical Analysis- The collected data was tabulated and analyzed with the help of statistical technique such as percentage coefficient of correlation chi-square test. They are described below.

Percentage- Simple comparison were made on the basis of the percentage. For drawing a percentage the frequency of a particular cell is multiplied by 100 and divided by the total number of respondents in the particular category to which they belong.

$$\text{Percentage} = \frac{\text{No. of respondents belonging to category}}{\text{Total No. of respondents}} \times 100$$

Chi-Square test

The goodness of fit test used the chi-distribution on the determine if a hypothesized population provides a good fit.

$$\chi^2 = \frac{\sum (f_i - e_i)^2}{e_i} \sim (n-1) d.f.$$

Where f_i ($i=1,2,3,\dots,n$) is a set of observed frequency.

e_i ($i=1,2,3,\dots,n$) is a set of expected frequency.

χ^2 = Chi-square.

OBSERVATION AND DISCUSSION

1. Showing distribution of subjects according to family size.

Family size	Frequency	%
1-3 members	16	16
4-6 members	50	50
7-9 members	20	20
More than 9 members	14	14
Total	75	100

2. Showing the distribution of subjects according to Education-

Education	Frequency	%
Illiterate	19	19
Somehow	9	9
Primary	3	3
Till 8th class	8	8
High School	10	10
Intermediate	16	16
Graduate	15	15
Post Graduate	20	20
Total	75	100

3. Showing distribution of subjects according to Caste.

Caste	Frequency	%
General	44	44
Schedule (SC)	20	20
Most Backward (ST)	8	8
Back words (OBC)	28	28
Total	100	100

4. Showing distribution of subjects according to Socio-Economic status.

SES	Frequency	%
Low SES	18	18
Lower-Middle SES	20	20
Middle SES	30	30
Upper-Middle SES	25	25
Upper SES	07	07
Total	100	100

5. Showing distribution of subjects according to their knowledge of Gov. Brand.

Brands	Frequency	%
AGMARK	44	44
ISI Mark	36	36
Purity Sign.	5	5
All above	15	15
Total	100	100

SUMMARY AND CONCLUSION

The present study was made to know the common food adulterants and knowledge about adulteration among student of Gorakhpur District. The survey was carried out in Gorakhpur city multistage stratified sampling techniques were used for the selection of 100% subjects. The research done on food adulteration and food adulterant knowledge and awareness of student. An interview schedule was prepared to collect the information from females belonging to selected area regarding their knowledge and awareness about adulteration and adulterants of foods. The number of nuclear families was higher (50%) among each group, means, 4-6 members in each family. Majority of subjects (20%) post graduate followed by illiterate (19%). Majority of subjects (44%) were found. The data indicated, majority of subject's earning source were belonged to skilled labour, following by business. The data reveals that majority of subjects (28%) fall in the category of middle SES and upper middle SES and minimum of the (25%) subject's lower-middle socio economic status. The data reveals that majority of subject (78%) have knowledge about adulteration of foods. Majority of subjects (31%) were think that if an article gave not any Government brands and (35%) subjects thinks, if an article affect our health, they think that it may be adulterated. Only minimum subjects (25%) know that if all above option are present with addition of if an article price is very less and if its quality is not according to me it may be adulterated. Maximum subjects (50%) think that if any fruits and vegetables have normal size and normal colors it may not be adulterated. Majority of subjects (38%) observe the milk adulteration by the smell of milk. Majority of subjects (48%) see only expiry date, followed by majority of subjects see, expire data, ingredients, price at the time if buying any food articles.

Adulterants

The data reveals that majority of subjects have knowledge about adulterants of wheat and rice Bengal gram and red gram dhal, green pea, Black pepper, asafetida (hing), Dalchini, Cumin, Tejpatta and honey adulterants. Majority of subject have not knowledge about adulterants of wheat flour, liquid milk, and vegetable oils, vegetable fats, gram flour, Turmeric, coriander see powder, chili powder,

cloves, sugar powder, coffee and common salt. Maximum subjects (71%) have not knowledge about sacrin adulterant which is use for increasing sweetening of sugar and fruits.

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